Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

Devices for the Exposure of Experimental Animals to Whole Tobacco Smoke: Chemical, Physical and Operational Characterization.

The primary experimental activity and initial goal of this contract involves the chemical, physical and operational characterization of three types of devices, supplied by the contractor, for the generation and subsequent exposure of animals to fresh cigarette smoke. The broader goal is to identify those characteristics of inhalation bioassay exposure methodologies which are critical to the development of a meaningful bioassay. Methods presently in existence will be applied to these studies while research progresses to develop the needed, more sophisticated, techniques.

The major area of this work concerns the chemical and physical definition of the smoke aerosol produced and offered to the animals. Specific questions to be addressed include the quantity and composition of the smoke offered the animals as functions of chamber position and time after introducing the puff. The influence of the animals on smoke quantity and composition through the course of an exposure must also be established. Integrated biological measures of the effectiveness of the device under study must be determined by lung dosimetry studies. The preferred animal containment system, not yet identified for these devices, will be identified by way of an extensive study of respiratory patterns of exposed animals. These and other miscellaneous studies will define the behavior of the smoking/exposure devices, identify needs for improvement, and establish a baseline to which other smoking/exposure devices can be related.

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Current Contract Level: $223,500.

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